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Data for Analysing Productivity Changes in Danish Agriculture

1985-2006

Institute of Food and Resource Economics (FOI)

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Data for Analysing Productivity Changes in Danish Agriculture 1985-2006

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Abstract

This Working Paper describes calculation of production and input use for the three main farming systems in Denmark, cash crop farming, dairy farming, and pig farming, based on the FOI farm account statistics for the period 1985-2006. The use of input is calculated as quantity indices for six main inputs, i.e. fertilizers, feedstuff, land, labour, machinery, and other capital, and quantity indices of 2-3 main types of output for each of the three farming systems. The calculations are performed by aggregating the individual inputs and outputs using a Törnqvist price index.

The final datasets are unbalanced panel, covering 22 years and a representative sample of 250-600 farms per year for each of the three farming systems. The intention is that the data will be used for subsequent analyses of changes in productivity in Danish agriculture.

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Preface

This Working Paper is prepared by Svend Rasmussen as the first part of a research project the objective of which is to analyze changes in agricultural productivity during the period 1985-2006. The project is based on the agricultural accounts from the Institute of Food and Resource Economics database, and the first part of the project published in this working paper is the data preparation in the form of aggregation of input and output data.

Mogens Lund
Institute of Food and Resource Economics
Copenhagen, December 2008

1. Introduction

Since Denmark joined the EU in 1973 agricultural productivity in Denmark has increased considerably. The Institute of Food and Resource Economics (FOI) has estimated that Total Factor Productivity (TFP) increased by 1.8 % per year from 1973 to 1980, and by 3.2 % per year from 1981 to 1993 ((Hansen, 1990), (Hansen, 1995)) with some differences between cash crop, dairy and pig farms. These changes were primarily attributable to technological changes (Hansen, 1995). Further analyses based on data from the period 1973-1995 were carried out by Rasmussen (2000) who showed that technological change was highest on cash crop farms (4.0 % per year) and lowest on dairy farms (1.0 % per year), with pig farms in between (2.2 % per year). The results also showed that technological changes increased significantly over time.

The analyses carried out by Hansen and Rasmussen were based on individual farm accounts collected by the Institute of Food and Resource Economics (FOI), University of Copenhagen. The Institute has collected representative farm accounts and produced annual farm income statistics since 1918. The farms included in the database are selected annually using stratified random sampling from the total Danish farm population to obtain representativity concerning farm size, geographical location and economic size (Institute of Food and Resource Economics, 2006). Since Denmark joined the EU in 1973, the farm accounts collected by FOI have been Denmark's official contribution to the EU farm account data network (FADN).

The two analyses performed by Hansen were based on analysis of changes in Total Factor Productivity (TFP) estimated as a quantity index of aggregate output (QY) divided by a quantity index of aggregate input (QX), i.e. TFP=QY/QX. The quantity indices QY and QX were estimated using a Fisher index (Balk, 1998, s. 8). Hansen did not perform any formal analysis of the individual components of changes in productivity but stated that the primary cause of changes in productivity is technical changes. Hansen also found that changes in farm size contributed to a growth in TFP of 0.38 % per year.

The analysis performed by Rasmussen (2000) was based on the same type of farm account data as used by Hansen, but the estimation approach was different. Rasmussen used an econometric approach to estimate a cost function and used the results to estimate technical changes and changes in elasticity of scale for the period 1973-1995.

The analysis by Hansen and Rasmussen cover the period up till the mid 1990th. Since then there have been further changes in the production structure and the technology, and new policy regulations have been implemented. These changes have probably influenced productivity, and there is an obvious need to update and extend earlier analysis of changes in agricultural productivity. At the same time, new methods for analysing changes in productivity have become available.

The objective of the present paper is to prepare a dataset to be used for an update of productivity analysis of Danish agriculture and for further analysis of changes in productivity using and comparing alternative methods of analysis. The basic data are the same as used by Hansen and Rasmussen, i.e. representative farms account data from the FOI database of agricultural account statistics. However, the use of alternative methods including for instance stochastic frontier analysis (SFA) and data envelopment analysis technique (DEA) call for careful preparation of data. This paper will describe this preparation of data only. The use of data for productivity analysis will be described in future working papers and articles following this paper.

2. The FOI farm account data

The farms included in the FOI database are selected annually using stratified random sampling from the total Danish farm population to obtain representativity concerning farm size, geographical location and economic size (Institute of Food and Resource Economics, 2006). The data used as the basis in the present analysis cover the 22 year period 1985-2006, and the full dataset for this period comprises 41,926 observations, which is an average of 1.906 farm accounts per year. The data used in the present paper only include *full-time farms*, defined as farms with a standard labour requirement of 1,665 hours or more, and comprises three independent sub-sets of the specialized farm system[1], *cash crop*, *dairy*, and *pig farms*. Between 70 and 80 per cent of the farms stay in the sample the following year. Hence, farms are on average represented in the sample around 4 subsequent years, and the dataset is therefore an *unbalanced, rotating panel dataset*.

The number of observations and the number of farms included in each of the three sub-samples are shown in the following Table 1.

Table 1. The data sample for the 22 year time period 1985-2006

	Number of obs.	Farms per year	Number of farms	Years per farm	Years per farm min	Years per farm max
Crop farms	5,522	251	1,779	3.10	1	22
Dairy farms	13,206	600	3,053	4.33	1	22
Pig farms	9.143	416	2,319	3.94	1	22

[1] The classification of farm systems is according to the definition of types of farming used in the EU agricultural statistics (FADN) (Institute of Food and Resource Economics, 2007). Crop farms comprise farms with more than 2/3 of the standard gross margin (SGM) from cash crops. Dairy farms comprise farms with more than 2/3 of the SGM from dairy cows, or at least 1/3 of the SGM from dairy cows and no other enterprise with more than 1/3 of the SGM. Pig farms comprise farms with more than 2/3 of the SGM from pigs, or at least 1/3 of the SGM from pigs and no other enterprise with more than 1/3 of the SGM.

Table 1 shows that dairy farms have the highest number of observations. 13,206 accounts have been collected from 3,053 farms, which equals 4.33 accounts (years) per farm. Pig farms come in second and cash crop farms have the lowest number of observations.

More detailed descriptive statistics of the dataset is given in Table 2, 3 and 4 for cash crop, dairy and pig farms, respectively.

Table 2. Descriptive statistics for crop farms

Arable		Land, ha			Labour, hours			Standard Gross Margin, DKK		
Year	N	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN
1985	273	20	936	121	800	21,417	4,000	19,972	794,984	105,396
1986	294	18	700	106	500	24,817	3,570	21,550	479,862	91,269
1987	291	14	559	105	700	23,250	3,425	15,700	515,686	101,896
1988	258	19	460	107	466	23,200	3,498	18,216	506,232	101,258
1989	262	11	559	112	320	19,200	3,471	18,829	520,452	108,080
1990	277	14	947	116	1,700	20,421	3,656	9,665	925,668	114,439
1991	275	22	626	133	1,000	24,868	3,783	22,427	767,400	133,651
1992	263	18	642	128	1,000	16,750	3,664	22,069	762,912	133,308
1993	216	13	601	138	1,000	26,090	3,645	23,829	736,879	134,455
1994	223	8	682	133	1,000	29,890	3,615	31,394	571,202	125,603
1995	247	5	812	137	1,000	13,200	3,468	26,541	687,176	129,602
1996	229	18	813	144	1,000	15,705	3,352	31,567	673,021	138,592
1997	216	9	813	162	600	15,867	3,522	33,480	771,583	164,014
1998	180	45	803	168	967	17,600	3,645	44,055	957,749	177,374
1999	197	40	1,252	184	900	17,683	3,870	38,701	1,094,577	192,418
2000	224	24	1,236	179	1,300	17,600	3,805	23,675	1,116,154	190,613
2001	258	21	1,236	189	1,000	17,600	4,015	14,887	1,149,210	205,846
2002	260	26	1,121	196	1,150	19,000	3,972	25,773	1,268,826	212,432
2003	272	17	1,591	206	1,000	47,000	4,122	15,857	2,810,870	228,944
2004	269	36	1,706	208	1,200	21,415	3,966	26,975	1,538,174	219,523
2005	277	0	1,710	219	800	49,000	4,152	40,397	2,457,326	240,641
2006	261	0	1,710	246	700	34,920	4,358	33,147	2,151,012	248,438

Table 3. Descriptive statistics for dairy farms

Arable		Land, ha			Labour, hours			Standard Gross Margin, DKK		
Year	N	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN
1985	716	0	228	49	1,200	15,000	3,991	5,198	348,009	62,537
1986	723	8	249	48	1,200	18,500	3,883	13,196	384,240	59,951
1987	658	8	226	49	1,100	12,800	3,892	10,069	289,304	71,609
1988	639	4	267	50	600	11,950	3,827	11,695	268,528	71,876
1989	622	0	289	54	1,000	12,600	3,890	15,691	305,381	81,499
1990	631	8	234	56	1,700	12,800	3,925	16,260	386,361	91,335
1991	636	2	234	59	965	13,560	3,961	19,572	366,316	104,527
1992	631	1	233	60	1,047	12,600	3,954	21,750	404,935	106,869
1993	613	1	472	62	1,400	11,050	4,052	22,204	464,943	114,279
1994	600	9	453	65	1,150	13,100	4,109	26,891	471,717	119,528
1995	620	0	437	68	1,000	14,536	4,125	30,754	736,171	129,205
1996	646	11	382	72	1,300	20,241	4,184	27,673	770,089	135,149
1997	606	14	397	75	1,600	21,233	4,195	37,093	819,963	143,858
1998	494	5	450	80	1,508	17,000	4,278	39,551	1,009,179	154,401
1999	569	8	376	92	1,665	15,125	4,491	33,319	790,809	164,455
2000	613	5	454	97	1,725	17,730	4,543	38,758	1,016,211	175,199
2001	600	1	517	100	1,263	21,600	4,617	33,083	1,018,097	178,775
2002	586	4	615	108	1,000	17,400	4,681	38,140	1,088,732	196,132
2003	534	9	529	114	1,500	17,700	4,746	36,318	1,198,833	207,540
2004	505	0	657	121	1,150	18,700	4,767	39,565	1,363,981	219,199
2005	493	0	636	127	1,100	25,700	5,005	48,552	1,662,216	243,938
2006	471	0	681	122	1,800	25,300	5,169	52,435	2,050,540	271,132

Table 4. Descriptive statistics for pig farms

Arable		Land, ha			Labour, hours			Standard Gross Margin, DKK		
Year	N	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN
1985	397	5	285	50	1,100	13,300	3,947	17,163	440,428	81,809
1986	407	0	370	49	925	18,400	3,930	15,504	545,412	80,959
1987	400	7	213	53	800	18,500	3,870	29,102	551,139	112,904
1988	410	1	370	55	1,200	18,600	3,922	25,743	694,424	119,997
1989	415	1	378	56	700	18,600	3,994	20,526	676,242	122,490
1990	375	5	380	59	1,700	19,000	4,215	21,028	887,841	135,214
1991	403	0	415	64	900	20,500	4,331	32,826	1,021,508	155,320
1992	426	0	340	63	1,100	23,675	4,444	33,932	1,157,711	163,134
1993	375	0	278	67	1,100	19,400	4,374	37,628	849,609	177,441
1994	413	0	284	66	1,400	20,700	4,276	37,913	974,620	185,407
1995	401	0	459	73	1,100	22,200	4,291	37,466	816,765	184,077
1996	422	0	455	75	1,200	22,800	4,366	36,014	978,869	186,613
1997	416	0	522	83	1,200	24,000	4,621	41,742	1,249,890	202,673
1998	337	0	391	83	1,200	17,100	4,670	45,336	1,206,964	213,647
1999	399	0	333	92	1,500	22,900	4,813	36,210	1,291,545	258,763
2000	442	0	485	105	1,500	23,600	5,323	51,103	1,489,558	272,294
2001	468	0	418	113	800	30,200	5,711	38,789	1,439,597	275,871
2002	459	0	472	117	1,474	32,200	5,768	52,862	1,726,344	300,288
2003	410	0	555	130	1,500	33,200	6,435	55,753	1,847,812	375,643
2004	459	0	644	141	1,350	32,000	6,659	43,740	1,913,918	385,118
2005	458	0	602	147	1,500	31,190	6,527	61,525	1,600,353	376,733
2006	451	0	542	157	1,600	33,000	7,048	69,710	2,141,453	433,491

For all three farm types, the acreage per farm has more than doubled over the 22 years. Cash crop farms have the largest acreage, and in 2006 the average size of the cash crop farms included was 246 ha. Dairy and pig farms are about the same size, but in the last few years the pig farms have become larger, and in 2006 the average acreage of the pig farms included was 157 ha. Labour input was around 4,000 hours per farm in 1985 for all three farm type. While labour input has stayed at this level over the years on crop farms, dairy farms and especially pig farms have grown measured in labour input. The increasing size of pig farms compared to the other two farm types becomes more clear in Table 4, where the farm size measured in Standard Gross Margin (SGM)[2] is more than 400,000 DKK on pig farms in 2006, compared to a level of around 205,000 DKK on cash crop farms and dairy farms.

The average number of years in which a specific farm stays in the sample is shown in Table 1. These numbers cover a large variation, and many farms stay in the database only one or two years. This is illustrated in Figure 1, 2, and 3, where the vertical axis measures the number of farms, and the horizontal axis measures the number of observations per farm. The distribution is heavily skewed with many farms having only one year of observation and only very few farms have more than ten years of observations. Thus, the dataset is clearly a very incomplete panel data set. On the other hand, the farms included in any year are a representative sample of all Danish full time farms.

[2] See definition of SGM in FOI agricultural account statistics (2006).

Figure 1.

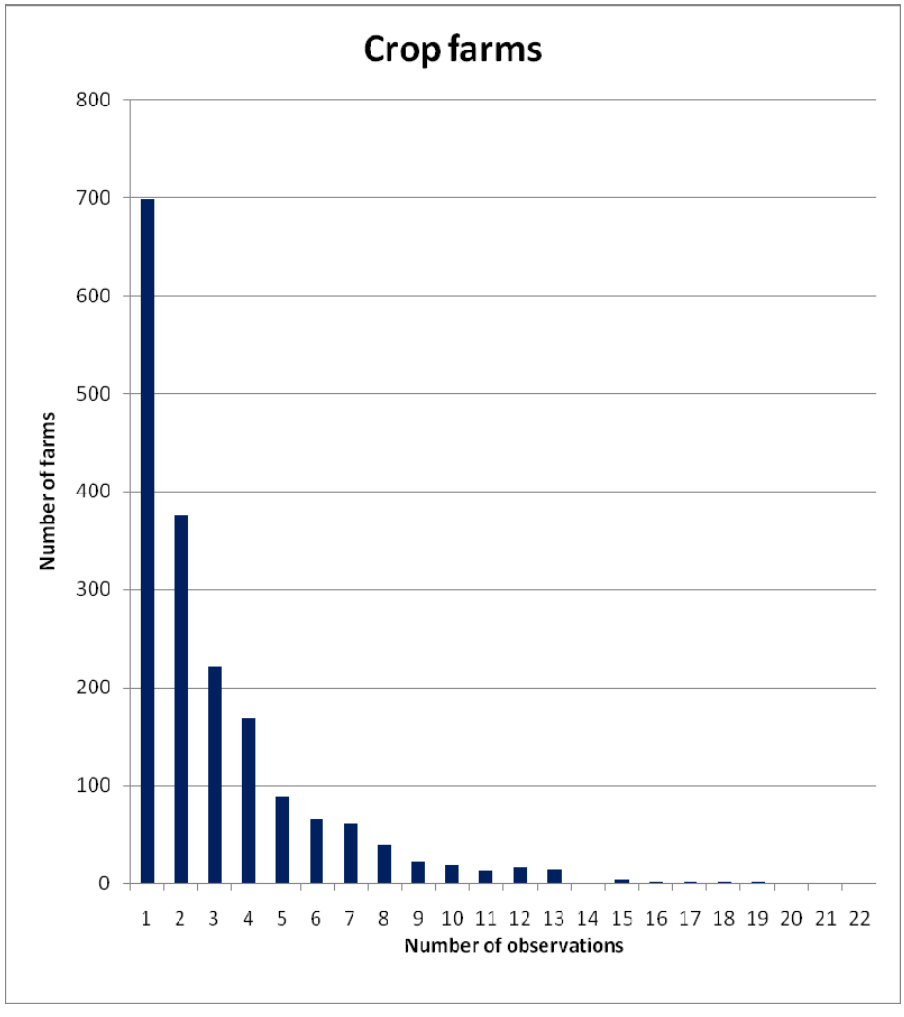

Crop farms
800
700
600
500
400
300
200
100
0
Number of farms
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
Number of observations

Figure 2.

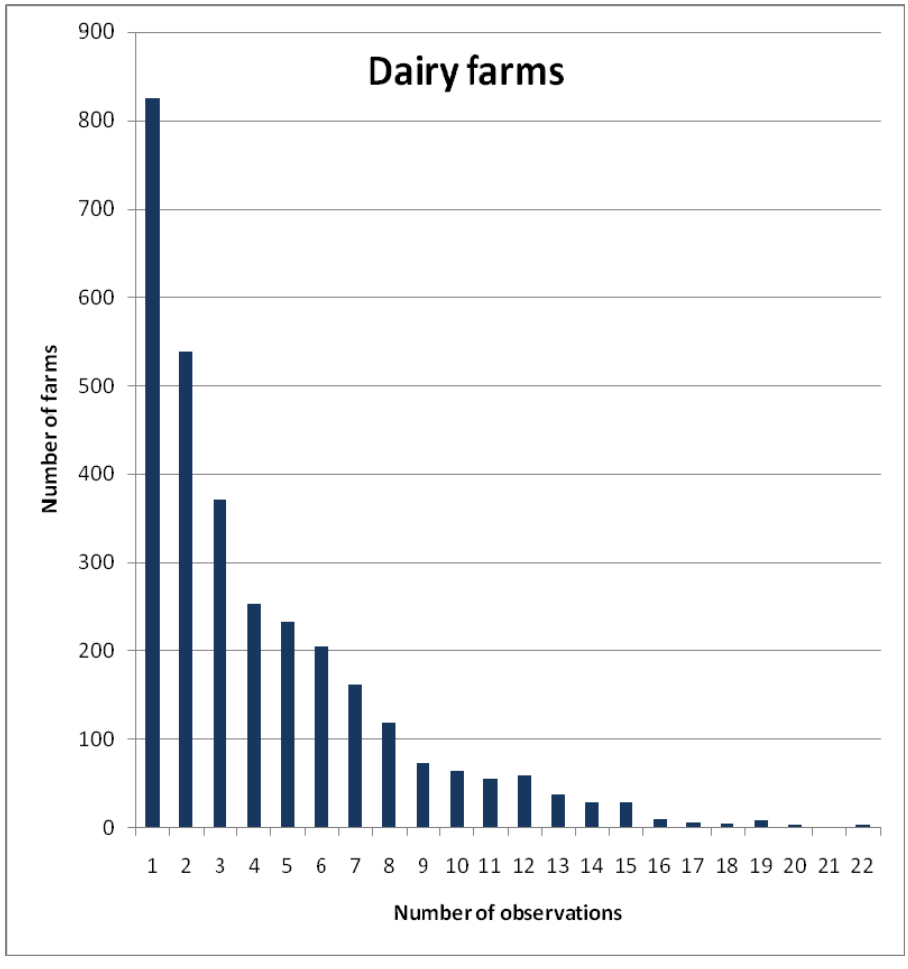
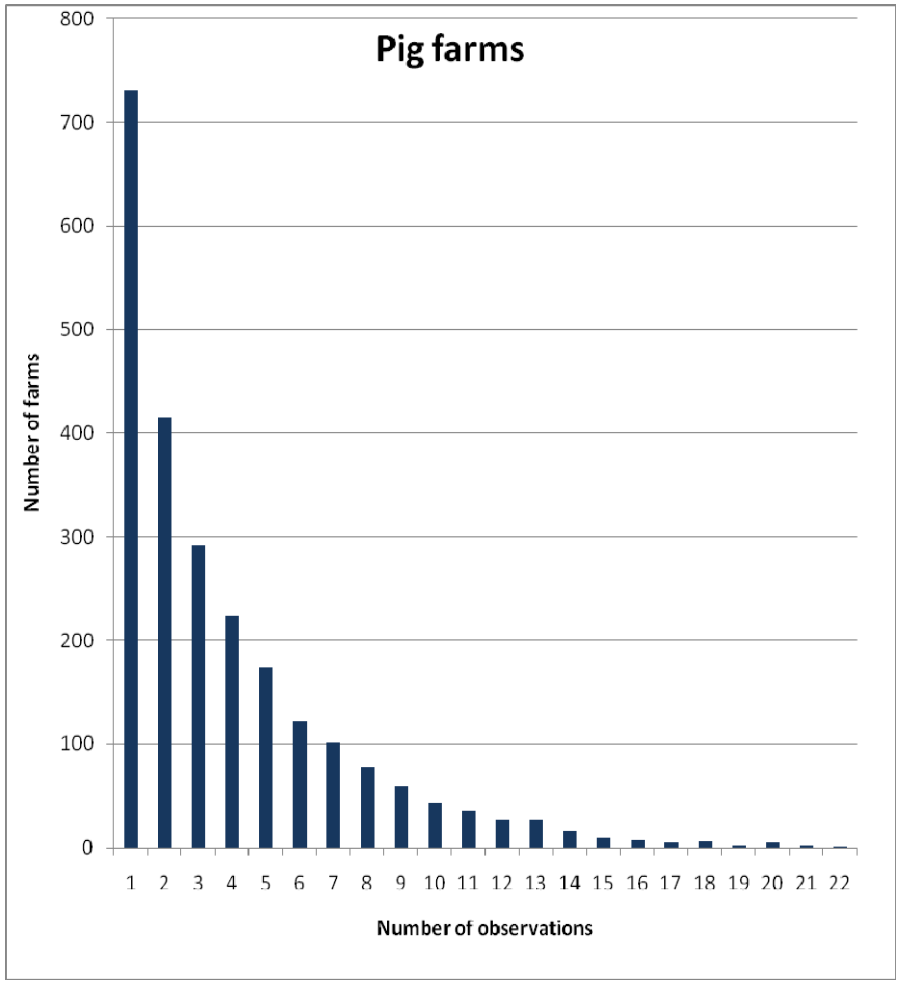

Dairy farms
900
800
700
600
500
400
300
200
100
0
Number of farms
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
Number of observations

Figure 3.


Pig farms
Number of farms
800
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
Number of observations

3. Contents of the farm accounts

The accounts provide a relatively detailed economic and technical description of the individual farms in the form of 2,200 individual account variables with variable names N1 – N2200[3]. Some of the variables describe the farm in more general terms (geographical region, age of farmer, farming system, labour input, acreage, rented land, number of various types of domestic animals, etc.). The variable N1 is used to store a unique *farm code* in the form of a *number*, which follows the farm over time. This facility makes panel data analysis possible.

The production described in the form of input and output is specified in the form of 41 individual outputs and 48 individual inputs measured as the value of production and the value (cost) of input, respectively. Besides the specification of the individual outputs and inputs in the form of *values*, many of the outputs are also specified in the form of *quantities*. For *some* of the products (for instance milk, grain, piglets) this provides the opportunity to calculate farm and year specific output prices (*price=value* divided by *quantity*). However, input quantities are in general *not* available, and therefore it is not possible to capture farms specific *input* prices.

Econometric and other types of analysis of productivity require *quantities* of input and output as the basic data input. As most firms produce more outputs and certainly all firms use more inputs, estimation of a single measure of productivity (Total Factor Productivity[4]) requires some kind of *aggregation* of outputs and inputs. According to the theory of index numbers (Diewert, 1981), any relevant (i.e. economic based) aggregation (estimation of index numbers) requires knowledge of prices. Therefore, productivity analysis requires input and output quantities and input and output prices as the basic data input.

As mentioned above, it is possible for some of the individual outputs to estimate farm specific output prices. However, as this is not the case for all outputs, and certainly not the case for any of the inputs, it was decided (in accordance with earlier analyses (

[3] In the period 1985-1989 the number of account variables was only 1,457. In 1990 this was changed to 2,200, and the names and definition of some of the variables were changed (more detailed specification). A new major change took place in 2006, where the naming system and the specification were further changed (variable names Vxxxxxx). The datasets generated as the outcome of this paper use variable names as defined in the 1990-2005 accounts (N1-N2200 names). For further details, see Appendix 1.

[4] Total Factor Productivity (TFP) is defined as: TFP=QY/QX, where QY is a measure of aggregate output and QX is a measure of aggregate input.

(Hansen, 1990), (Hansen, 1995), (Rasmussen, 2000)) to use the same input and output prices for all farms. As farmers are normally considered to be price takers both in the input market and in the output market, this is not considered a very restrictive assumption. *The prices* used in this paper are prices from the yearly Agricultural Price Statistics from the Institute of Food and Resource Economics (1985-2007) (see Appendix 2).

4. Aggregation of prices and quantities

As mentioned before, the accounts include production values of 41 individual outputs and costs of 48 individual inputs. For econometric and other empirical economic analysis this number is much too high and has to be reduced to a reasonable number of variables. The ideal or optimal number of variables depends on the choice of model and the number of observations available. The balance is on the one side to keep the individual variables to provide as detailed a description of the production as possible, and on the other side to reduce the number of variables to have enough of degrees of freedom to provide reliable parameter estimates. One should also consider that models based on the logarithm of the variables cannot be used when the variables have zero values. The choice also depends on the characteristics of the individual inputs and outputs, and the way in which they are able to substitute for each other. Correlation between the individual inputs and the individual outputs also has to be considered, and inputs (and outputs) that are highly correlated may just as well be aggregated.

Based on a mix of considerations including the consideration of what seems to be the tradition within econometric analysis of agricultural production and what would be the possible models in which the data would be used as input (for instance Stochastic Frontier Analysis and DEA-analysis), it was decided to aggregate input into *six main input quantity variables*, fertilizer (X1), feedstuff (X2), land (X3), labour (X4), machinery (X5) and other capital (X6). While these six main inputs are used as input variables for all three farms types, it was decided to differentiate aggregation of output according to farm type. For each of the three sub-sets (cash crop, dairy, and pig farms), the individual outputs were aggregated into two or three *main outputs*. For *crop farms*, two outputs are distinguished: 1) cash crop products (Y2)[5] and 2) other products (Y9), where 'other products' (Y9) includes all cattle products, pigs and other animal products. For *dairy farms*, three outputs are distinguished: 1) cash crop products (Y2), 2) cattle products (beef and milk) (Y3), and 3) other products (Y7), where 'other products' (Y7) includes pigs and other animal products (except cattle products). For *pig farms* three outputs are distinguished: 1) cash crop products (Y2), 2) pigs (Y4), and 3) other products (Y8), where 'other products' (Y8) includes cattle products and other animal products (except pig products). The main product, *cash crops*, includes all the individual crops grain, grass seed, rape, etc. as well as EU subsidies (area payment), subsidies for environmentally friendly agriculture (MVJ) and

[5] The variable names used correspond to the variable names used in the Working Paper xx

income from contractor operations. The *single payment* (from 2005) is *not* included. *Cattle products* includes milk, beef and EU subsidies for suckling cows and male animals. *Pig products* includes piglets and slaughter pigs.

The main product *cash crops* includes all the individual cash crops (grain, grass seed, rape…), EU subsidies (area payment), subsidies for environmental friendly agriculture (MVJ) and income from contractor operations. The *single payment* (from 2005) is *not* included. *Cattle products* includes milk and other outputs from cattle (beef etc.) and EU subsidies for suckling cows and male animals. *Pigs* includes piglets and slaughter pigs.

The six main inputs are calculated as follows: 'Land' (X3) is the hectares of land registered in the accounts. 'Labour' (X4) is the number of working hours including the farmer, family members and paid labour registered in the accounts (variable N588).[6] The quantities of the remaining four inputs (fertilizers, feedstuff, machinery, other capital) were calculated by dividing the total cost of each of the four input types with the Törnqvist price index[7] for the input elements involved. The procedure is the same as just described for aggregation of output. 'Fertilizers' includes fertilizers, seed, pesticides, lime and other crop cost. 'Feedstuff' includes concentrates, roughage (bought), and veterinary services and medicine. 'Machinery' includes interest, depreciation, maintenance, insurance, contractor and fuel. 'Other capital' includes interest of stocks, interest, depreciation, maintenance and insurance of buildings, cost of insemination and control, and energy. Individual interest measures are estimated for each asset type because asset-specific tax rules and asset-specific price changes were taken into account when calculating the asset-specific, tax adjusted, real rate of interest. The input prices (P_i^F) used are prices from the yearly Agricultural Price Statistics from FOI. Prices in a given year are the same for all farms. The cost shares are determined in a similar way as the revenue shares mentioned above.

[6] Labour cost (including estimated cost of family labour) is also available, and therefore labour input may alternatively be estimated by dividing the total labour cost by the wage of farm labour.
[7] See section 4.1.

4.1. Price indices

Alternative price indices were considered including Laspeyres, Paasche and Fisher indices described in for instance Balk (1998) and Coelli, Prasada Rao, O'Donnell, & Battese (2005). As mentioned by Diewert (1981), the Törnqvist price index (named after Törnqvist (1936)) has the advantage of being a so-called superlative index, because it is an exact index under the translog flexible functional form of the production technology. It is therefore regarded as a better index than the others, and therefore chosen here.[8]

The general form of the chain version[9)] of a Törnqvist input (output) price index is:

$$P^{t+1} = \left[\prod_{i=1}^{n} \left\{ \frac{p_i^{t+1}}{p_i^t} \right\}^{½(s_i^{t+1}+s_i^t)} \right] P^t \qquad (1)$$

where P^t is the estimated price index of the input (output) aggregate in question in year *t*, p_i^t is the price of the individual inputs (outputs) *i* in year *t* and s_i^t is the cost (revenue) share of the individual inputs (outputs) *i* in year *t*.

The following example illustrates the use of equation (1). The input X1 includes - fertilizers as the major input. However, other inputs like seed, pesticides, lime, etc. are also included in X1. Thus, the total cost of the inputs included in the aggregate variable "fertilizers" (X1) is the sum of the cost of seed (N1077), the cost of fertilizers (N1085), the cost of pesticides (N1082), the cost of lime and merl (N1109) and cost of sundries (N1095)[10].

The total cost of "fertilizers" (X1) is therefore:
COSTX1=N1077+N1085+N1082+N1109+N1095. Correspondingly, the cost *share* of each of the five individual inputs are therefore estimated as:

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[8] A number of empirical analyses found in the international literature (see for instance (Irz & Thirtle, 2004)) use deflated values as quantity indices. If the data covers long time series this is considered a very rough way to generate quantity indices.

[9] The advantage of using a chain index is shown in Diewert (1978). See also Coelli er al. (2005, s. 155).

[10] N1077,…, N1095 are the variable names of the account items. In the following I use capital letters to refer to the same items in the Appendix 1, where all the definitions are given. For more details concerning definition of X1 in the various sub-periods (1985-1989, 1990-2005, 2006), see Appendix 1.

s_1= SX11=N1077/COSTX1, s_2=SX12=N1085/COSTX1, s_3= SX13=N1082/COSTX1, s_4=SX14=N1109/COSTX1 and s_5=SX15=N1095/COSTX1. The prices of the individual inputs are p_1=P16, p_2=P17, p_3=P18, p_4=P60, p_5=P61, where P16…P61 refer to the prices/price indices shown in Appendix 2. Inserting period t and period t+1 values of s_i and p_i (i=1…5) in (1) provides for calculation of the term in the square parenthesis, and multiplying this by the base price P^t gives as the result the price index P^{t+1} of input X1 in period t+1. (In Appendix 1 the price index of input X1 is named PX1, and similar names are given to the other inputs). Dividing total costs COSTX1 by the price index PX1 result in the quantity index QX1.

'Feedstuff' (X2) includes concentrates, roughage (bought), and veterinary services and medicine. 'Machinery' (X5) includes interest, depreciation, maintenance, insurance, contractor and fuel. 'Other capital' (X6) includes interest of stocks, interest, depreciation, maintenance and insurance of buildings, cost of insemination and control and energy. Individual capital costs (see Section 4.2) are estimated for each asset type because asset specific tax rules and asset specific price changes were taken into account when calculating the asset specific, tax adjusted, real rate of interest. Details are given in Appendix 1. The production value of each aggregate output is named BRUTYj (j=2, 3, 4, 5, 6, 7, 8, 9), and the corresponding estimated quantity indices are named QYj (j=2, 3, 4, 5, 6, 7, 8, 9).

The price indices are scaled so that the price index for the first year (1985) is 100, i.e. P^{1985}=100. Price indices for the individual farms in the following years are estimated as follows: If the farm in question is in the dataset in year t and year t+1, then the shares (s_i^t and (s_i^t and s_i^{t+1}) in equation (1) refer to the shares for the farm in question. If the farm is in the dataset year t+1, but not in year t, then the shares s_i^t refer to the shares for the farm in question, and the shares s_i^t refer to the (weighted) average of the shares of all farms in the sample.[11]

4.2. Estimation of user cost of capital

Calculation of the price indices of Machinery (X5) and other Capital (X6) needs special attention. The reason is that these variables include capital costs including depreciation and interest, and these cost items are influenced by tax rules, interest subsidies and price changes. To include these effects, I estimate the *user cost of capital* defined

[11] This procedure ensures an appropriate solution to the transitivity problem in multilateral comparisons (see Coelli et al. (2005, s. 106).

by Trail (1982) and used by Glass and McKillop (1989). The user cost of capital after taxes per unit of capital, which in the year in question has the price p, is equal to:

$$p[i(1-s)+\delta](1-sh) \qquad (2)$$

where p is the price index of the capital good in question, i is the nominal rate of interest, s is the marginal tax rate, δ is the rate of depreciation and h is the present value of tax deductable depreciations per DKK invested. Add to this the after tax maintenance cost of $v(1-s)$ per unit of capital invested. The *total capital cost per year* converted to before tax money income level (i.e. divided by $(1-s)$) per unit of capital is therefore:

$$w = p\frac{[i(1-s)+\delta](1-sh)}{(1-s)} + v \qquad (3)$$

Equation (3) does not take into account that possible capital gains will influence the real capital costs. If there are capital gains of q, then the nominal rate of interest should be reduced by q or some fraction of q depending of the tax rules for taxation of capital gains. The specific form of equation (3) therefore depends on the specific type of asset. The value of h depends on the taxation rules and therefore also depends on the type of asset. The following models have been used to estimate capital costs per unit of capital for herd of animals, land, machinery, buildings:

Animals: $$w = p(i-q) + v \qquad (4)$$

Land: $$w = p(i - \frac{q}{1-s}) + v \qquad (5)$$

Machinery: $$w = p\frac{[i(1-s)-q(1-sh)+\delta](1-sh)}{(1-s)} + v \qquad (6)$$

Buildings: $$w = p\frac{[i(1-s)-q(1-sh)+\delta](1-sh)}{(1-s)}+v \qquad (7)$$

Details are given in Appendix 1 and in the paper "Projektplan" which is available (in Danish) from the author on request. The nominal rate of interest (*i*), the tax rate (*s*), the depreciation value (*h*) for machinery and buildings for each year are shown in Appendix 2 as RENTE, SKAT, h_inv and h_bygn, respectively. Indices of real cost of the individual assets in question are shown in Appendix 2 as P63-P69.[12]

[12] The procedure for estimating P63-P69 are saved as notes to the headings in the Excel file 'Pris indeks basic.xls', which is available from the author on request. The paper "Projektplan" referred to in the Excel file notes is available (in Danish) from the author on request. "Projektplan" was written as a background paper to the Rasmussen (2000) project where the same account database was used.

5. The final dataset

The final datasets generated include the three individual datasets ARABLE, DAIRY and PIGS available as SAS datasets or Excel data files. The number of observations and some general statistics are shown in Table 1, 2, 3 and 4 above.

The variables included in the three final datasets are selected variables from the original farm accounts (variable names N1-N2200). Besides this, the datasets include the following variables:

1. Prices (or price indices) of each of the individual inputs and outputs. These prices have names P1-P73 and are also shown in Appendix 2 of this paper.
2. Quantities of each of the individual inputs (outputs), estimated as costs (value of production) divided by the relevant prices mentioned under 1) above. These quantities are named X*ij* (Y*kl*), where *i* (*k*) refers to the number of the input (output) aggregate to which it is allocated, and *j* (*l*) are consecutive numbers of the input (output) items included in the input (output) aggregate in question. Thus, the quantity variable Y28 refers to the quantity of sugar beet, because sugar beet is number 8 of the individual outputs that are included in the output aggregate crop products, which has the variable name Y2.
3. Shares of cost (production values) of the individual inputs (outputs) estimated as cost (production value) of the individual inputs (outputs) divided by the total cost (production value) of the aggregate input (output) to which it belongs. These shares are named SX*ij* (S*kl*), where *i* (*k*) refers to the number of the input (output) aggregate to which the input (output) belongs, and *j* (*l*) are consecutive numbers of the input (output) items included in the input (output) aggregate in question. Thus the share S28 refers to the share of sugar beet in the total value crop production, because sugar beet is number 8 of the individual outputs that are included in the output aggregate crop products, which has the variable name Y2.
4. Prices indices of aggregate inputs (outputs) with names PX*i* (PY*k*), where *i* (*k*) refers to the number/name of the input (output) aggregate. Thus, PY2 refers to the price index of the output aggregate crop products, because this aggregate has the name Y2.
5. Costs (product values) of aggregate input (output) estimated as the sum of costs (product values) of the individual input (output) items that belongs to the input (output) aggregate in question. The costs (product values) are named COSTX*i* ((BRUTY*k*) where *i* (*k*) refers to the number of the input

(output) aggregate. Thus, the product value of crop products has the variable name BRUTY2 because it is the sum of the product values of the items that are included in the aggregate crop products, which has the nameY2.

6. Quantity indices of aggregate input (output) estimated as COSTX*i* ((BRUTY*k*) divided by PX*i* (PY*k*), i.e. cost (product value) divided by price index

The names just described correspond to the variable names used in Appendix 1, to which I refer for further details and explanation. As the definition and names of some of the farm account variables changed in 1990 and again in 2006, separate description have been prepared for the sub-periods 1985-1989, 1990-2005 and 2006. The most significant change in the data definition took place in 2006 where all the account variables were given new names. In 2006 the definition of revenue from crop production and cattle production was also changed. Before 2006, the value of roughage production was *not* considered an income in crop production, and was *not* considered a cost in cattle production. In 2006 (and later) this has changed so the farm accounts since 2006 includes the value of roughage as an income in crop production, and as a cost in cattle production. To avoid the consequences of this change, the data for 2006 were adjusted so that the definition of revenue and cost is the same as in the previous years.

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Appendix 1. Definition of variables

Calculation of variables 1985-1989

All variable names from accounts (Nxxx) refer to names 1990-2005.

	Gross output, DKK	Output share	Price index	Price variable	Estimated quantity	Quantity variable
Gross output crop production 1985-1989 (QY2						
Crop						
Grain	N903	S21	Grain	P10	N903/P10	Y21
Pulse	N787	S22	Peas, ripe	P11	N787/P11	Y22
Grass seed	N792	S23	Seed total	P12	N792/P12	Y23
Pulse seed	N793	S24	White clover	P50	N793/P50	Y24
Rape	N795	S25	Rape	P13	N795/P13	Y25
Other seeds	FRO=N796+N794+N797	S26	Seed total	P12	(N796+N794+N797)/P12	Y26
Potatoes	N788	S27	Potatoes	P14i	N788/P14i	Y27
Sugar beets	N790	S28	Sugar beets	P15	N790/P15	Y28
Roughage etc.	N908	S29	Grain	P10	N908/P10	Y29
Other crops	N964	S210	Vegetables	P51	N964/P51	Y210
Other sources	N1045	S211	Contractor	P20	N1045/P20	Y211
Total	BRUTY2	1		PY2	BRUTY2/PY2	QY2
Gross output cattle 1985-1989 (QY3)						
Product						
Milk	N1031	S31	Milk	P1	N1031/P1	Y31
Other output cattle	N1032	S32	Beef	P2	N1032/P2	Y32
Subsidy suckling cows	N1296	S33	Subsidy for suckling cows	P53	N1296/P53	Y33
Total	BRUTY3	1		PY3	BRUTY3/PY3	QY3
Gross output pigs 1985-1989 (QY4)						
Piglets	N989	S41	Piglets	P3	N989/P3	Y41
Slaughter pigs	N1033	S42	Pig meat	P4	N1033/P4	Y42
Total	BRUTY4	1		PY4	BRUTY4/PY4	QY4

	Gross output, DKK	Output share	Price index	Price variable	Estimated quantity	Quantity variable
Gross output poultry 1985-1989 (QY5)						
Product						
Poultry products	N1034		Poultry products	P5	N1034/P5	
Total	BRUTY5	1		PY5	BRUTY5/PY5	QY5
Gross output other animal products 1986-1989 (QY6)						
Other animal products	N1015		Furred animals	P52	N1015/P52	
Total	BRUTY6	1		PY6	do	QY6
Gross output other animal products 1985-1989 (QY7)						
Piglets	N989	S71	Piglets	P3	N989/P3	Y71
Slaughter pigs	N1033	S72	Pig meat	P4	N1033/P4	Y72
Poultry products	N1034	S73	Poultry products	P5	N1034/P5	Y73
Other	N1015	S74	Furred animals	P52	N1015/P52	Y74
Total	BRUTY7	1		PY7	BRUTY7/PY7	QY7
Gross output other animal products 1986-1989 (QY8)						
Milk	N1031	S81	Milk	P1	N1031/P1	Y81
Other output cattle	N1032	S82	Beef	P2	N1032/P2	Y82
Subsidy suckling cows	N1296	S83	Subsidy for suckling cows	P53	N1296/P53	Y83
Poultry products	N1034	S85	Poultry products	P5	N1034/P5	Y85
Other animal products	N1015	S86	Furred animals	P52	N1015/P52	Y86
Total	BRUTY8	1		PY8	BRUTY8/PY8	QY8

	Gross output, DKK	Output share	Price index	Price variable	Estimated quantity	Quantity variable
Gross output other animal products 1986-1989 (QY9)						
Milk	N1031	S78	Milk	P1	N1031/P1	Y78
Other output cattle	N1032	S79	Beef	P2	N1032/P2	Y79
Subsidy suckling cows	N1296	S710	Subsidy for suckling cows	P53	N1296/P53	Y710
Piglets	N989	S71	Piglets	P3	N989/P3	Y71
Slaughter pigs	N1033	S72	Pig meat	P4	N1033/P4	Y72
Poultry products	N1034	S73	Poultry products	P5	N1034/P5	Y73
Other animal products	N1015	S74	Furred animals	P52	N1015/P52	Y74
Total	BRUTY9	1		PY9	BRUTY9/PY9	QY9
Milk quota 1985-1989 (QX0)						
Factor						
Milk	N1051-N982/(N1031/N1051)*P73*RENTE			P73*RENTE		
Total	COSTX0	1		PX0	COSTX0/PX0	QX0
Land 1985-1989 (QX3)						
Factor						
Land	N35		Tenancy payment estimated	PX3=(N1225+N1226)/N34	N35	
Total				PX3		QX3
Fertilizers etc. (QX1) 1985-1989						
Factor						
Seed	N1077	SX11	Seed	P16	N1077/P16	X11
Fertilizers	N1085	SX12	Fertilizers	P17	N1085/P17	X12
Pesticides	N1082	SX13	Pesticides	P18	N1082/P18	X13
Lime and merl	N1109	SX14	Lime and merl	P60	N1109/P60	X14
Soundries crop prod	DIVER =N1072+N1095	SX15	Various inputs	P61	DIVER/P61	X15
Total	COSTX1	1		PX1	COSTX1/PX1	QX1

	Gross output, DKK	Output share	Price index	Price variable	Estimated quantity	Quantity variable
Feedstuff (QX2) 1985-1989						
Factor						
Concentrates	N1096	SX21	Concentrates	P21 or P22	N1096/P21 or P22	X21
Roughage	N1100	SX22	Grain and concentrates	P62	N1100/P62	X22
Vet and medicine	N1103	SX23	Sundries incl. vet and medicine	P23	N1103/P23	X23
Total	COSTX2	1		PX2	COSTX2/PX2	QX2
Labour (QX4) 1985-1989						
Factor						
Labour	COSTX4=N1126+N2020-N1321		Salary hired labour	P27		
Alternative total	Registered number of hours				N588	QX4A
Total	COSTX4			PX4	COSTX4/P27	QX4B
Machinery (QX5) 1985-1989						
Factor						
Interest	RENT5=P63/P28*N660-N1265*N660/(N660+BYGN)	SX51	Estimated capital cost	P63	RENT5/P63	X51
Depreciation	AFSK5=(P64/P28)*N1138	SX52	Estimated depreciation	P64	AFSK5/P64	X52
Maintenance	N1112 BYGN=(N1134/0.07)-N1421	SX53	Maintenance equipment	P29	N1112/P29	X53
Insurance	FORS5=N1117*N660/(N660+BYGN)	SX54	Insurance	P32	FORS5/P32	X54
Contractor	N1086	SX55	Contractor	P20	N1086/S55	X55
Fuel	N1090	SX56	Diesel	P19B	N1090/P19B	X56
Total	COSTX5	1		PX5	COSTX5/PX5	QX5

	Gross output, DKK	Output share	Price index	Price variable	Estimated quantity	Quantity variable
Other capital (QX6) 1985-1989						
Factor						
Interest cattle	REKV6=(P65/P6)*N677	SX61	Estimated capital cost	P65	REKV6/P65	X61
Control associati-on	N1102	SX62	Control	P24	N1102/P24	X62
Insemination	N1101	SX63	Insemination	P25	N1101/P25	X63
Other, animals	ANDE6=N1105+N1130	SX64	Sundries incl.vet and medicine	P26	ANDE6/P26	X64
Interest , pigs	RESV6=(P66/P7)*N678	SX65	Estimated capital cost	P66	RESV6/P66	X65
Interest, poultry	REFJ6=(P67/P8)*N679	SX66	Estimated capital cost	P67	REFJ6/P67	X66
Interest, other animals	REAN6=(P68/P9)*N682	SX67	Estimated capital cost	P68	REAN6/P68	X67
Interest, buildings	REBY6=P69/P30*BYGN-N1265* BYGN/(N660+BYGN)	SX68	Estimated capital cost	P69	REBY6/P69	X68
Depreciation, buil-dings	AFBY6=(P70/P30)*N1134	SX69	Estimated depreciation	P70	AFBY6/P70	X69
Maintenance, buildings	N1108	SX610	Maintenance, buyil-dings	P31	N1108/P31	X610
Building insurance	FORS6=N1117*BYGN/(N660+BYGN)	SX611	Insurance	P32	FORS6/P32	X611
Energy	ENER6=N1089+N1087	SX612	Electricity	P19E	ENER6/P19E	X612
Stocks in soil	REJO6=0.5*RENTE*N624	SX613	Fertilizers	P17	REJO6/P17	X613
Total	COST6	1		PX6	COSTX6/PX6	QX6

Calculation of variables 1990-2005

	Gross output, DKK	Output share	Price index	Price variable	Estimated quantity	Quantity variable
Gross output crop production (QY2)						
Crop						
Grain	N903	S21	Grain	P10	N903/P10	Y21
Pulse	N787	S22	Peas, ripe	P11	N787/P11	Y22
Grass seed	N792	S23	Seed total	P12	N792/P12	Y23
Pulse seed	N793	S24	White clover	P50	N793/P50	Y24
Rape	N795	S25	Rape	P13	N795/P13	Y25
Other seeds	FRO=N796+N794+N797	S26	Seed total	P12	(N796+N794+N797)/P12	Y26
Potatoes, consum	N788	S27	Potatoes, consum	P14s	N788/P14s	Y27
Opotatoes, industry	N789	S212	Potatoes, industry	P14i	N789/P14i	Y212
Sugar beets	N790	S28	Sugar beets	P15	N790/P15	Y28
Roughage	N908	S29	Grain	P10	N908/P10	Y29
Other crops	ANDRE=N798+N819+N826+N907+N964	S213	Vegetables	P51	ANDRE/P51	Y213
Subsidy, grain	HAKOR=N1288+N1300	S214	Area payment grain	P56	(N1288+N1300)/P56	Y214
Subsidy, peas	HAAER=N1292+N1293	S215	Area payment peas	P57	(N1292+N1293)/P57	Y215
Subsidy, rape	HARAP=N1291+N1299	S216	Area payment rape	P58	(N1291+N1299)/P58	Y216
Subsidy, fallow	HABRA=N1301+N1302	S217	Area payment fallow	P59	(N1301+N1302)/P59	Y217
MVJ-subsidy	MVJ=N1282+N1277	S218	Grain	P10	(N1282+N1277)/P10	Y218
Other sources	N1045	S211	Contractor	P20	N1045/P20	Y211
Total	BRUTY2	1		PY2	BRUTY2/PY2	QY2
Gross output cattle 1990-2005 (QY3						
Product						
Milk	N1031	S31	Milk	P1	N1031/P1	Y31
Other output cattle	N1032	S32	Beef	P2	N1032/P2	Y32
Subsidy suckling cows	N1296	S33	Subsidy suckling cows	P53	N1296/P53	Y33
Male animal subsidy	N1295	S34	Male animal subsidy	P54	N1295/P54	Y34
Total	BRUTY3	1		PY3	BRUTY3/PY3	QY3

	Gross output, DKK	Output share	Price index	Price variable	Estimated quantity	Quantity variable
Gross output pigs 1990-2005 (QY4)						
Product						
Piglets	N989	S41	Piglets	P3	N989/P3	Y41
Slaughter pigs (net)	N1033	S42	Pig meat	P4	N1033/P4	Y42
Total	BRUTY4	1		PY4	BRUTY4/PY4	QY4
Gross output poultry 1990-2005 (QY5)						
Product						
Poultry products	N1034		Poultry products	P5	N1034/P5	
Total	BRUTY5	1		PY5	BRUTY5/PY5	QY5
Gross output other animal products 1990-2005 (QY6)						
Furred animals	N1037	S61	Mink	P52	N1037/P52	Y61
Sheep, Horses, etc.	ANDYR=N1035+N1036+N1015	S62	Lamb	P71	ANDYR/P71	Y62
Subsidy sheep	N1298	S63	Subsidy sheep	P72	N1298/P72	Y63
Other income animal	N1038	S64	Beef	P2	N1038/P2	Y64
Total	BRUTY6	1		PY6	BRYTY6/PY6	QY6
Gross output other aninmals 1990-2005 (QY7)						
Product						
Piglets	N989	S71	Piglets	P3	N989/P3	Y71
Slaughter pigs (net)	N1033	S72	Pig meat	P4	N1033/P4	Y72
Poultry	N1034	S73	Poultry products	P5	N1034/P5	Y73
Furred animals	N1037	S74	Mink	P52	N1037/p52	Y74
Sheep, horses, etc	ANDYR=N1035+N1036+N1015	S75	Lamb	P71	ANDYR/P71	Y75
Subsidy sheep	N1298	S76	Subsidy sheep	P72	N1298/P72	Y76
Other income animal	N1038	S77	Beef	P2	N1038/P2	S77
Total	BRUTY7	1		PY7	BRUTY7/PY7	QY7

	Gross output, DKK	Output share	Price index	Price variable	Estimated quantity	Quantity variable
Gross output other animal products 1990-2005 (QY8)						
Milk	N1031	S81	Milk	P1	N1031/P1	Y81
Other output cattle	N1032	S82	Beef	P2	N1032/P2	Y82
Subsidy suckling cows	N1296	S83	Subsidy for suckling cows	P53	N1296/P53	Y83
Male animal subsidy	N1295	S84	Male animal subsidy	P54	N1295/P54	Y84
Poultry products	N1034	S85	Poultry products	P5	N1034/P5	Y85
Furred animals	N1037	S86	Mink	P52	N1037/P52	Y86
Sheep, Horses, etc.	ANDYR=N1035+N1036+N1015	S87	Lamb	P71	ANDYR/P71	Y87
Subsidy sheep	N1298	S88	Subsidy sheep	P72	N1298/P72	Y88
Other income animal	N1038	S89	Beef	P2	N1038/P2	Y89
Total	BRUTY8	1		PY8	BRUTY8/PY8	QY8
Gross output other animal products 1990-2005 (QY9)						
Milk	N1031	S78	Milk	P1	N1031/P1	Y78
Other output cattle	N1032	S79	Beef	P2	N1032/P2	Y79
Subsidy suckling cows	N1296	S710	Subsidy for suckling cows	P53	N1296/P53	Y710
Male animal subsidy	N1295	S711	Male animal subsidy	P54	N1295/P54	Y711
Piglets	N989	S71	Piglets	P3	N989/P3	Y71
Slaughter pigs	N1033	S72	Pig meat	P4	N1033/P4	Y72
Poultry products	N1034	S73	Poultry products	P5	N1034/P5	Y73
Furred animals	N1037	S74	Mink	P52	N1037/P52	Y74
Sheep, Horses, etc.	ANDYR=N1035+N1036+N1015	S75	Lamb	P71	ANDYR/P71	Y75
Subsidy sheep	N1298	S76	Subsidy sheep	P72	N1298/P72	Y76
Other income animal	N1038	S77	Beef	P2	N1038/P2	Y77
Total	BRUTY9	1		PY9	BRUTY9/PY9	QY9

	Gross output, DKK	Output share	Price index	Price variable	Estimated quantity	Quantity variable
Milk quota 1990-2005 (QX0)						
Factor						
Milk quota	Before 1995: N1051-N982/(N1031/N1051). From 1995: N1067*RF RF before 1998: 1. RF after 1998: (1-0.47*(436-N1068)/436)					
Total quantity	QX0	1		PX0=P73*RENTE		QX0
Total cost	COSTX0=P73*RENTE*QX0					
Land 1990-2005 (QX3)						
Factor						
Land	N35*(N1225+N1226)/N34					N35
Total	COSTX3	1		PX3=(N1225+N1226)/N34	N35	QX3
Fertilizers etc. 1990-2005 (QX1)						
Factor						
Seed	N1077	SX11	Seed	P16		X11
Fertilizers	KUNST=N1085+N1071+N1074	SX12	Fertilizers	P17		X12
Pesticides	N1082	SX13	Pesticides	P18		X13
Lima and merl	N1109	SX14	Lime	P60		X14
Sundries crop prod.	N1095	SX15	Various inputs	P61		X15
Total	COSTX1	1		PX1	COSTX1/PX1	QX1
Feedstuff 1990-2005 (QX2)						
Factor						
Concentrates	N1096	SX21	Concentrates	P21 or P22		X21
Roughage	GROVF=N1099+N1100	SX22	Grain and concentrates	P62		X22
Vet and medicine	N1103	SX23	Sundries incl. vet and medicine	P23		X23
Total	COSTX2	1		PX2	COSTX2/PX2	QX2

	Gross output, DKK	Output share	Price index	Price variable	Estimated quantity	Quantity variable
Labour 1990-2005 (QX4)						
Factor						
Labour	COSTX4=N1126-N1321+N2020	1	Hired labour	P27		
Alternative total	Registered number of hours				N588	QX4A
Total		1		PX4	COSTX4/P27	QX4B
Machinery 1990-2005 (QX5)						
Factor						
Interest	RENT5=P63/P28*N660-(N1265+N1274)* N660/(N660+BYGN)	SX51	Estimated capital cost	P63		X51
Depreciation	AFSK5=(P64/P28)*N1138	SX52	Estimated depreciation	P64		X52
Maintenance	N1112	SX53	Maintenance, equipment	P29		X53
Insurance	FORS5=N1117*N660/(N660+BYGN)+N1116	SX54	Insurance	P32		X54
Contractor	MASK5=N1086+N1088+N1106	SX55	Contractor	P20		X55
Fuel	N1090	SX56	Diesel fuel	P19B		X56
Total	BYGN=(N1134/0.05)-N1421 COSTX5	1		PX5	COSTX5/PX5	QX5

	Gross output, DKK	Output share	Price index	Price variable	Estimated quantity	Quantity variable
Other capital 1990-2005 (QX6						
Factor						
Interest, cattle	REKV6=(P65/P6)*N677	SX61	Estiamted capital cost	P65		X61
Control association	N1102	SX62	Control	P24		X62
Insemination	N1101	SX63	Insemination	P25		X63
Other, animals	ANDE6=N1104+N1105	SX64	Sundries incl.vet and medicine	P26		X64
Interest, pigs	RESV6=(P66/P7)*N678	SX65	Estimated capital cost	P66		X65
Interest, poultry	REFJ6=(P67/P8)*N679	SX66	Estimated capital cost	P67		X66
Interest other animals	REAN6=(P68/P9)*(N681+N649)	SX67	Estimated capital cost	P68		X67
Interest, buildings	REBY6=P69/P30*BYGN-(N1265+N1274)* BYGN/(N660+BYGN)	SX68	Estimated capital cost	P69		X68
Depreciation, buildings	AFBY6=(P70/P30)*(N1134+N1132)	SX69	Estimated depreciation	P70		X69
Maintenance, buildings	VEBY6=N1108+N1081	SX610	Maintenance, buildings	P31		X610
Building insurance	FORS6=N1117*BYGN/(N660+BYGN)	SX611	Insurance	P32		X611
Energy	ENER6=N1078+N1089+N1091+N1092+N1094+N1118	SX612	Electricity	P19E		X612
Stocks in soil	REJO6=0.5*RENTE*N624	SX613	Fertilizers	P17		X613
Total	COSTX6	1		PX6	COSTX6/PX6	QX6

Calculation of variables 2006

	Gross output, DKK	Output share	Price index	Price variable	Estimated quantity	Quantity variable
Gross output crop production 2006 (QY2)						
Crop						
Grain	N903	S21	Grain	P10	N903/P10	Y21
Pulse	N787	S22	Peas, ripe	P11	N787/P11	Y22
Grass seed	N792	S23	Seed total	P12	N792/P12	Y23
Pulse seed	N793	S24	White clover	P50	N793/P50	Y24
Rape	N795	S25	Rape	P13	N795/P13	Y25
Other seeds	FRO=N796+N794+N797	S26	Seed total	P12	FRO/P12	Y26
Potatoes, consum	N788	S27	Potatoes, consum	P14s	N788/P14s	Y27
Opotatoes, industry	N789	S212	Potatoes, industry	P14i	N789/P14i	Y212
Sugar beets	N790	S28	Sugar beets	P15	N790/P15	Y28
Roughage	INTER=N908-V152020-V152170-V130930	S29	Grain	P10	INTER/P10	Y29
Other crops	ANDRE=N819+N786+N964	S213	Vegetables	P51	ANDRE/P51	Y213
Subsidy, grain	HAKOR=0	S214	Area payment grain	P56	0	Y214
Subsidy, peas	HAAER=0	S215	Area payment peas	P57	0	Y215
Subsidy, rape	HARAP=0	S216	Area payment rape	P58	0	Y216
Subsidy, fallow	HABRA=N1305+N1302	S217	Area payment fallow	P59	(N1305+N1302)/P59	Y217
MVJ-subsidy	MVJ=N1282	S218	Grain	P10	N1282/P10	Y218
Other sources	N1045	S211	Contractor	P20	N1045/P20	Y211
Total	BRUTY2	1		PY2	BRUTY2/PY2	QY2

	Gross output, DKK	Output share	Price index	Price variable	Estimated quantity	Quantity variable
Gross output cattle 2006 (QY3)						
Product						
Milk	N1031	S31	Milk	P1	N1031/P1	Y31
Other output cattle	N1032-V186460	S32	Beef	P2	(N1032-V186460)/P2	Y32
Subsidy suckling cows	0	S33	Subsidy suckling cows	P53	0	Y33
Male animal subsidy	N1314	S34	Male animal subsidy	P54	N1314/P54	Y34
Total	BRUTY3	1		PY3	BRUTY3/PY3	QY3
Gross output pigs 2006 (QY4)						
Product						
Piglets	0	S41	Piglets	P3	N989/P3	Y41
Slaughter pigs (net)	N1042-V186530	S42	Pig meat	P4	(N1042-V186530)/P4	Y42
Total	BRUTY4	1		PY4	BRUTY4/PY4	QY4
Gross output poultry 2006 (QY5)						
Product						
Poultry products	N1034-V186570		Poultry products	P5	(N1034-V186570)/P5	
Total	BRUTY5	1		PY5	BRUTY5/PY5	QY5
Gross output other animal products 2006 (QY6						
Furred animals	N1037-V186610	S61	Mink	P52	(N1037-V186610)/P52	Y61
Sheep, Horses, etc.	ANDYR=N1035+N1036-V186580-V186600	S62	Lamb	P71	ANDYR/P71	Y62
Subsidy sheep	N1298	S63	Subsidy sheep	P72	N1298/P72	Y63
Other income animal	N1038	S64	Beef	P2	N1038/P2	Y64
Total	BRUTY6	1		PY6	BRYTY6/PY6	QY6

	Gross output, DKK	Output share	Price index	Price variable	Estimated quantity	Quantity variable
Gross output other animal products 2006 (QY7)						
Product						
Piglets	0	S71	Piglets	P3	N989/P3	Y71
Slaughter pigs (net)	N1042-V186530	S72	Pig meat	P4	(N1042-V186530)/P4	Y72
Poultry	N1034-V186570	S73	Poultry products	P5	(N1034-V186570)/P5	Y73
Furred animals	N1037-V186610	S74	Mink	P52	(N1037-V186610)/P52	Y74
Sheep, Horses, etc.	ANDYR=N1035+N1036-V186580-V186600	S75	Lamb	P71	ANDYR/P71	Y75
Subsidy sheep	N1298	S76	Subsidy sheep	P72	N1298/P72	Y76
Other	N1038	S77	Beef	P2	N1038/P2	Y77
Total	BRUTY7	1		PY7	BRUTY7/PY7	QY7
Gross output other animal products 2006 (QY8)						
Milk	N1031	S81	Milk	P1	N1031/P1	Y81
Other output cattle	N1032-V186460	S82	Beef	P2	(N1032-V186460)/P2	Y82
Subsidy suckling cows	0	S83	Subsidy for suckling cows	P53	0	Y83
Male animal subsidy	N1314	S84	Male animal subsidy	P54	N1314/P54	Y84
Poultry products	N1034-V186570	S85	Poultry products	P5	(N1034-V186570)/P5	Y85
Furred animals	N1037-V186610	S86	Mink	P52	(N1037-V186610)/P52	Y86
Sheep, Horses, etc.	ANDYR=N1035+N1036-V186580-V186600	S87	Lamb	P71	ANDYR/P71	Y87
Subsidy sheep	N1298	S88	Subsidy sheep	P72	N1298/P72	Y88
Other income animal	N1038	S89	Beef	P2	N1038/P2	Y89
Total	BRUTY8	1		PY8	BRUTY8/PY8	QY8

	Gross output, DKK	Output share	Price index	Price variable	Estimated quantity	Quantity variable
Gross output other animal products 2006 (QY9						
Milk	N1031	S78	Milk	P1	N1031/P1	Y78
Other output cattle	N1032-V186460	S79	Beef	P2	(N1032-V186460)/P2	Y79
Subsidy suckling cows	0	S710	Subsidy for suckling cows	P53	0	Y710
Male animal subsidy	N1314	S711	Male animal subsidy	P54	N1314/P54	Y711
Piglets	0	S71	Piglets	P3	0	Y71
Slaughter pigs	N1042-V186530	S72	Pig meat	P4	(N1042-V186530)/P4	Y72
Poultry products	N1034-V186570	S73	Poultry products	P5	(N1034-V186570)/P5	Y73
Furred animals	N1037-V186610	S74	Mink	P52	(N1037-V186610)/P52	Y74
Sheep, Horses, etc.	ANDYR=N1035+N1036-V186580-V186600	S75	Lamb	P71	ANDYR/P71	Y75
Subsidy sheep	N1298	S76	Subsidy sheep	P72	N1298/P72	Y76
Other income animal	N1038	S77	Beef	P2	N1038/P2	Y77
Total	BRUTY9	1		PY9	BRUTY9/PY9	QY9
Milk quota 2006 (QX0)						
Factor	**Quantity**					
Milk quota	Before 1995: N1051-N982/(N1031/N1051). From 1995: N1067*RF RF before 1998: 1. RF after 1998: (1-0.47*(436-N1068)/436)					
Total quantity	QX0	1		P73*RENTE	SEE COLUMN C	QX0
Total cost	COSTX0=P73*RENTE*QX0					

	Gross output, DKK	Output share	Price index	Price variable	Estimated quantity	Quantity variable
Land 2006 (QX3)						
Factor						
Land	N35*(N1225+N1226)/N34			PX3=(N1225+N1226)/N34	N35	
Total	COSTX3	1		PX3	N35	QX3
Fertilizers etc. 2006 (QX1)						
Factor						
Seed	N1077	SX11	Seed	P16		X11
Fertilizers	KUNST=N1085+N1071+N1074	SX12	Fertilizers	P17		X12
Pesticides	N1082	SX13	Pesticides	P18		X13
Lima and merl	V152365	SX14	Lime	P60		X14
Sundries crop prod.	N1095	SX15	Various inputs	P61		X15
Total	COSTX1	1		PX1	COSTX1/PX1	QX1
Feedstuff 2006 (QX2)						
Factor						
Concentrates	N1096	SX21	Concentrates	P21 or P22		X21
Roughage	GROVF=N1099+N1100	SX22	Grain and concentrates	P62		X22
Vet and medicine	N1103	SX23	Sundries incl. vet and medicine	P23		X23
Total	COSTX2	1		PX2	COSTX2/PX2	QX2
Labour 2006 (QX4)						
Factor						
Labour	COSTX4=N1155	1	Hired labour	P27		
Alternative total	Registered number of hours				N588	QX4A
Total		1		PX4	COSTX4/P27	QX4B

	Gross output, DKK	Output share	Price index	Price variable	Estimated quantity	Quantity variable
Machinery 2006 (QX5)						
Factor						
Interest	RENT5=P63/P28*N660-(N1274)* N660/(N660+BYGN)	SX51	Estimated capital cost	P63		X51
Depreciation	AFSK5=(P64/P28)*N1138	SX52	Estimated depreciation	P64		X52
Maintenance	N1112	SX53	Maintenance, equipment	P29		X53
Insurance	FORS5=N1117*N660/(N660+BYGN)	SX54	Insurance	P32		X54
Contractor	MASK5=N1160+N1107	SX55	Contractor	P20		X55
Fuel	N1090 BYGN=(N1134/0.05)-N1421	SX56	Diesel fuel	P19B		X56
Total	COSTX5	1		PX5	COSTX5/PX5	QX5

	Gross output, DKK	Output share	Price index	Price variable	Estimated quantity	Quantity variable
Other capital 2006 (QX6)						
Factor						
Interest, cattle	REKV6=(P65/P6)*N677	SX61	Estiamted capital cost	P65		X61
Control association	N1102	SX62	Control	P24		X62
Insemination	N1101	SX63	Insemination	P25		X63
Other, animals	ANDE6=N1105	SX64	Sundries incl.vet and medicine	P26		X64
Interest, pigs	RESV6=(P66/P7)*N678	SX65	Estimated capital cost	P66		X65
Interest, poultry	REFJ6=(P67/P8)*(N642+N643+N645)	SX66	Estimated capital cost	P67		X66
Interest other animals	REAN6=(P68/P9)*(N646+N647+N648+ N649+N653)	SX67	Estimated capital cost	P68		X67
Interest, buildings	REBY6=P69/P30*BYGN-(N1274)* BYGN/(N660+BYGN)	SX68	Estimated capital cost	P69		X68
Depreciation, buildings	AFBY6=(P70/P30)*(N1134)	SX69	Estimated depreciation	P70		X69
Maintenance, buildings	VEBY6=N1108+N1081	SX610	Maintenance, buildings	P31		X610
Building insurance	FORS6=N1117*BYGN/(N660+BYGN)	SX611	Insurance	P32		X611
Energy	ENER6=N1078+N1089+N1091+ N1092+N1094+N1118	SX612	Electricity	P19E		X612
Stocks in soil	REJO6=0.5*RENTE*N624	SX613	Fertilizers	P17		X613
Total	COSTX6	1		PX6	COSTX6/PX6	QX6

Appendix 2. Price indices

Source: Agricultural price Statistics, Institute of Food and Resource Economics

Year X1	Milk P1	Beef P2	Piglets P3	Pork P4	Poultry products P5	Cattle P6	Pigs P7	Poultry P8
1985	95.6888	163.2823	419.0000	131.8263	117.5962	392.7500	131.8263	88.0000
1986	96.7045	158.0688	363.0000	119.1190	115.2701	392.8500	119.1190	82.7000
1987	99.3887	151.3023	334.0000	109.4187	107.1288	391.5000	109.4187	74.4000
1988	106.1355	154.1864	340.0000	110.0977	112.5564	409.4500	110.0977	81.9000
1989	110.4157	159.9545	385.0000	118.9250	113.7194	431.4000	118.9000	81.9000
1990	108.2031	152.1897	393.0000	116.0149	103.3813	430.9500	116.4950	74.5000
1991	106.2151	139.0371	391.0000	118.4147	98.1479	393.7000	118.3935	73.8000
1992	104.4732	137.4117	368.0000	118.0242	95.1957	377.5500	117.7214	70.8000
1993	102.1465	133.6614	299.0000	91.6459	96.9553	391.2000	96.4434	68.0000
1994	102.3602	136.6556	306.0000	96.1352	96.0972	413.8000	99.8204	66.0000
1995	99.7836	127.8302	338.0000	97.8227	90.3866	402.7000	104.0813	64.0000
1996	98.4529	112.6049	378.0000	107.4163	98.5289	351.0000	117.3619	64.6000
1997	98.5497	111.7715	392.0000	110.5639	105.6011	335.8000	122.1247	70.4000
1998	98.3844	114.8798	273.0000	77.5610	106.2500	350.2000	87.9712	69.0000
1999	96.0658	105.6585	253.0000	74.6560	93.3482	347.4000	84.5759	62.1000
2000	98.2876	110.5913	340.0000	95.5307	94.7484	353.3125	106.8698	60.9000
2001	101.0175	94.7233	418.0000	114.0610	103.7194	320.4165	126.6626	66.4000
2002	100.6949	94.6853	325.0000	90.4083	101.5322	342.8960	102.7058	65.7000
2003	97.7674	92.9984	279.0000	78.8770	99.5708	355.2083	91.5077	61.8000
2004	92.5295	96.5429	313.0000	87.7066	99.3595	322.4375	101.2028	63.6000
2005	88.8722	112.7196	314.0000	88.6883	97.2963	362.8750	102.3676	63.6000
2006	87.8825	122.0235	338.0000	93.1968	91.7096	400.8335	108.3088	56.6000

Year X1	Others (mink) P9	Grain P10	Peas P11	Seed for sale P12	Rape P13	Potatoes industry P14i	Potatoes consum P14s	Suger beet P15
1985	90.0000	170.6469	221.7525	113.1367	211.3736	91.1000	68.5000	100.0168
1986	121.3000	168.9290	228.0033	116.5084	208.5923	116.6000	109.9000	103.1305
1987	80.0000	161.8282	211.0370	118.3815	195.2424	115.7000	110.1000	112.9435
1988	62.0000	156.9035	189.7547	100.6243	169.8220	101.4000	76.8000	108.0370
1989	41.6000	153.8113	193.1777	86.6763	178.3047	112.3000	108.2000	105.2063
1990	57.4000	147.2832	166.3888	94.6466	182.8826	103.1000	91.6000	96.7144
1991	42.8000	155.8853	177.1092	98.6317	164.3988	134.1000	126.9000	100.4764
1992	40.0000	155.9285	186.9670	102.6168	85.8591	103.7000	105.1000	99.2598
1993	61.6000	130.4623	112.8338	104.6729	86.3026	105.8000	81.6000	99.1418
1994	52.4000	120.2955	89.0431	103.7383	102.3441	110.0000	185.6000	100.6702
1995	78.0000	116.8599	84.0460	100.0000	92.1693	106.7000	208.7000	99.4753
1996	141.0000	118.2608	100.3229	99.0000	108.5656	104.6000	114.1000	98.4249
1997	125.7000	109.5640	98.6391	108.9000	105.7907	105.6000	81.6000	98.9873
1998	119.4000	100.0733	80.8956	99.0990	109.2372	105.6000	129.0000	96.2206
1999	87.2000	98.0488	73.9925	94.1400	79.6866	104.6000	140.0000	95.2002
2000	126.4000	103.5188	88.7625	96.0300	87.2592	100.4000	86.0000	101.9497
2001	125.1000	104.9048	103.4280	95.0700	105.4549	92.3000	104.0000	96.3366
2002	130.1000	91.5764	107.8095	106.4700	107.2859	87.7000	87.0000	101.7137
2003	110.6000	98.8186	100.2686	107.5400	108.7367	87.7000	107.0000	100.0519
2004	137.1000	106.1493	90.4463	112.9200	103.3768	87.7000	104.0000	95.3087
2005	141.3000	92.0536	88.2465	100.5000	96.6422	87.7000	78.0000	106.9565
2006	175.2000	97.1210	93.4156	72.3600	112.4620	87.7000	119.0000	75.1304

Year X1	Seed (input) P16	Fertilizers P17	Chemicals P18	Energy electric P19E	Energy fuel P19B	Contractor P20	Concentra-tes, cattle P21	Pig feed P22
1985	90.2101	102.0610	93.4293	377.3688	107.2279	60.2518	156.0907	175.5948
1986	90.8017	83.3882	91.1818	336.4140	66.2819	63.1472	136.4000	168.0657
1987	98.4917	81.5976	86.6870	332.5136	70.9017	63.1472	138.0821	170.4406
1988	92.5822	81.5976	97.9563	392.9706	73.3818	67.5649	159.6033	192.6237
1989	98.1213	82.4565	88.5775	437.8258	79.7037	71.0298	150.4506	167.3077
1990	95.7474	87.6101	92.7458	447.5769	91.8124	74.0615	132.4718	150.4304
1991	94.3242	93.5875	95.1314	446.6018	82.6701	72.6233	133.3326	159.1520
1992	96.6439	87.0280	94.7105	434.9005	79.3632	76.4278	135.4996	161.3653
1993	98.1134	85.1780	88.5378	441.7262	80.1900	79.8050	139.0320	152.8357
1994	94.5242	87.4099	86.2620	427.0995	77.3694	81.6667	136.4000	142.3758
1995	101.9710	93.7709	85.2060	431.0000	81.2112	82.9384	136.4000	138.9700
1996	92.8311	98.5525	95.8237	462.0000	92.5000	85.1621	143.7000	140.7600
1997	93.7088	94.1147	97.6398	472.0000	99.7000	88.8420	147.0000	145.7700
1998	92.7087	92.0260	95.8135	509.0000	88.5500	91.7960	137.0000	137.0800
1999	105.6806	86.4312	109.7657	509.0000	102.2000	93.6553	121.0000	124.0000
2000	96.8159	94.0935	106.7218	539.0000	148.2500	98.1547	126.0000	123.0000
2001	100.4571	107.3899	94.7491	590.0000	136.6000	99.7252	141.0000	134.0000
2002	102.7270	98.5166	98.5291	635.0000	128.3000	102.1201	143.0000	138.0000
2003	102.8380	99.8438	98.5820	692.0000	135.9500	104.4562	134.0000	126.0000
2004	110.6569	113.6454	98.6373	658.0000	155.6000	111.8963	140.0000	127.0000
2005	104.0676	119.6885	96.8686	673.0000	202.9000	118.6101	132.0000	125.0000
2006	105.8412	119.2219	87.7634	731.0000	218.3500	125.1374	130.0000	122.0000

Year X1	Veterinary services P23	Control P24	Insemi-nation P25	Soundries animal prod, P26	Salary P27	Machinery P28	Machinery mainte-nance P29	Buildings P30
1985	113.4090	76.9000	93.3000	113.4090	63.5204	60.6207	59.0062	61.0002
1986	117.1031	82.3000	98.9000	117.1031	66.3719	62.2778	61.3175	63.2775
1987	122.2748	86.4000	106.8000	122.2748	71.5834	65.1777	64.8524	67.3442
1988	128.3860	91.6000	111.1000	128.3860	75.7132	69.0883	68.0946	71.3863
1989	133.5214	98.0000	115.5000	133.5214	77.4831	72.9990	72.0485	75.5582
1990	137.8010	100.0000	115.5000	137.8010	80.6296	76.4751	74.6844	78.8031
1991	143.7923	99.0000	106.3000	143.7923	83.7171	78.6062	76.6576	76.2461
1992	157.4868	100.0000	104.2000	157.4868	86.2147	80.8395	78.9182	77.6817
1993	162.2313	103.0000	100.0000	162.2313	87.9256	80.7373	79.5851	79.8382
1994	166.8228	102.0000	101.0000	166.8228	91.2393	82.1685	81.3708	81.0211
1995	169.8838	102.0000	102.0000	169.8838	94.1400	85.1488	84.2119	83.6397
1996	173.2898	102.0000	103.0000	173.2898	97.3600	88.0506	87.0678	86.5663
1997	177.7714	97.0000	76.0000	177.7714	100.3300	90.8343	89.7830	89.0308
1998	180.7592	95.0000	76.0000	180.7592	103.5900	94.1607	92.9301	91.3413
1999	186.7347	95.0000	80.0000	186.7347	106.9200	95.3839	94.8120	95.0381
2000	192.7102	98.0000	86.0000	192.7102	110.2400	98.1116	97.6126	96.6893
2001	198.6857	105.0000	107.0000	198.6857	113.9100	99.9042	99.9532	100.4909
2002	204.6612	112.0000	114.0000	204.6612	117.4700	101.9842	102.4341	102.8198
2003	212.1306	116.0000	120.0000	212.1306	121.1000	103.4280	104.5467	105.3275
2004	219.6000	103.0000	121.0000	219.6000	124.9400	106.4033	107.6692	107.1157
2005	224.0000	116.4000	118.6000	224.0000	128.2200	109.7547	110.8469	109.9475
2006	230.0000	118.7000	119.8000	230.0000	136.2400	111.8880	114.8148	114.0379

Year X1	Buildings maintenance P31	Insurance P32	Interest RENTE	Taxes machinery SKAT	Tax-factor Buildings h_inv	Tax-factor clover h_byg	White on fields P50	Vegetables P51
1985	67.5141	70.3268	0.1020	0.5000	0.9500	0.8000	179.2722	95.0000
1986	68.6814	74.2846	0.1160	0.5000	0.9500	0.8000	158.9076	103.0000
1987	72.1836	76.7202	0.1148	0.5000	0.9500	0.8000	160.8596	121.0000
1988	76.5142	80.5540	0.1010	0.5000	0.9500	0.8000	95.6506	98.8000
1989	80.1578	83.0402	0.1070	0.5000	0.9500	0.8000	107.1518	106.6000
1990	83.2808	86.0237	0.1060	0.5000	0.9500	0.8000	99.7657	105.7000
1991	84.6295	78.7798	0.0997	0.5000	0.8500	0.7000	149.4639	132.9000
1992	84.9580	81.0473	0.0991	0.5000	0.8500	0.7000	139.6509	109.6000
1993	85.7494	83.6094	0.0829	0.5000	0.8500	0.7000	148.4087	117.7000
1994	87.8137	85.0449	0.0893	0.5000	0.8500	0.7000	135.2192	147.9000
1995	91.1375	86.6420	0.0758	0.5000	0.9000	0.7500	119.5500	119.0000
1996	91.9655	88.4554	0.0705	0.5000	0.9000	0.7500	109.4000	104.5000
1997	93.3907	90.5242	0.0632	0.5000	0.9000	0.7500	118.3500	110.7000
1998	94.8750	92.6165	0.0580	0.5000	0.9000	0.7500	105.5000	116.9000
1999	94.7912	94.6629	0.0554	0.5000	0.9000	0.7500	101.1000	107.6000
2000	97.5651	97.2193	0.0629	0.5000	0.9000	0.7500	100.0000	106.6000
2001	100.5036	99.3159	0.0575	0.5000	0.9000	0.7500	103.9500	125.9000
2002	101.9313	103.4648	0.0528	0.5000	0.9000	0.7500	111.2000	136.7000
2003	104.2905	109.5241	0.0433	0.5000	0.9000	0.7500	126.8000	129.2000
2004	110.5061	116.1740	0.0394	0.5000	0.9000	0.7500	143.1000	121.3000
2005	114.1353	120.4873	0.0349	0.5000	0.9000	0.7500	142.7500	110.1000
2006	118.9971	122.9108	0.0414	0.5000	0.9000	0.7500	108.9500	119.0000

Year X1	Mink P52	Subsidy suckling cow P53	Subsidy male animal P54	Slaughter premium P55	Area premium, grain P56	Area premium, peas P57	Area premium, rape P58	Area premium fallow P59
1985	90.0000	126.0000	-	-	-	-	-	-
1986	121.3000	129.0000	210.5000	-	-	-	-	-
1987	80.0000	129.0000	219.0000	-	-	-	-	-
1988	62.0000	219.0000	219.0000	-	-	-	-	-
1989	41.6000	357.0000	354.0000	-	-	-	-	-
1990	57.4000	357.0000	354.0000	-	-	-	-	-
1991	42.8000	360.0000	354.0000	-	-	-	416.3000	-
1992	40.0000	426.0000	354.0000	-	115.8000	301.1000	425.0000	208.4000
1993	61.6000	629.0000	539.0000	-	117.2000	304.7000	368.8000	210.9000
1994	52.4000	888.0000	701.0000	-	170.8000	317.2000	364.7000	278.1000
1995	78.0000	1122.0000	841.0000	-	219.6000	317.2000	368.5000	278.1000
1996	141.0000	1122.0000	842.0000	-	217.8000	314.7000	361.8000	275.9000
1997	125.7000	1122.0000	1045.0000	-	215.5000	311.3000	335.2000	273.0000
1998	119.4000	1122.0000	1045.0000	-	217.2000	313.7000	353.1000	275.1000
1999	87.2000	1122.0000	1045.0000	194.2000	216.9000	313.3000	379.2000	274.5000
2000	126.4000	1228.0000	1204.0000	201.0000	228.0000	281.7000	320.4000	228.0000
2001	125.1000	1357.0000	1380.0000	395.0000	242.4000	278.9000	280.8000	242.4000
2002	130.1000	1490.0000	1562.0000	595.0000	237.2000	273.0000	237.2000	237.2000
2003	110.6000	1490.0000	1562.0000	595.0000	237.8000	273.6000	237.8000	237.8000
2004	137.1000	1490.0000	1562.0000	595.0000	236.4000	236.4000	236.4000	236.4000
2005	141.3000	1490.0000	1175.0000	595.0000	236.4000	236.4000	236.4000	236.4000
2006	175.2000	1490.0000	1175.0000	595.0000	236.4000	236.4000	236.4000	236.4000

Year X1	Lime P60	Sundries crop prod. P61	Grain and concentra-tes P62	Interest real machinery P63	Deprecia-tion machinery P64	Interest real cattle P65	Interest real pigs P66	Interest real poultry P67
1985	98.9055	90.4228	137.2052	1.5904	63.6518	33.3441	16.0074	13.8160
1986	102.7096	91.2160	127.4483	2.3678	65.3917	40.3716	16.9986	17.3281
1987	105.9430	99.1478	129.2777	2.3246	68.4365	39.3761	16.9193	10.0238
1988	105.9430	92.8024	148.6694	1.5920	72.5427	28.2491	13.5839	8.2598
1989	113.3609	98.3547	133.2415	1.8979	76.6489	32.0078	12.7035	8.4780
1990	134.8538	94.5474	119.2160	2.3997	80.2989	50.5463	10.5650	10.3741
1991	141.6060	91.9912	112.2839	2.7062	90.3971	56.1155	14.4181	10.8117
1992	153.0182	90.0980	109.6132	3.6262	92.9654	48.9058	15.3236	9.1307
1993	126.9604	89.8989	109.0936	3.0500	92.8479	25.5318	9.7780	8.1217
1994	139.7040	87.7950	104.5694	3.2641	94.4938	27.6969	8.1268	8.0776
1995	142.5000	93.0388	99.8128	2.0374	93.6637	43.6040	6.5335	5.9251
1996	146.7000	95.8232	102.0553	1.6036	96.8556	47.9715	9.0669	3.0716
1997	157.0000	98.7650	106.8965	1.2832	99.9178	35.6402	10.3413	2.5890
1998	163.3000	96.1557	101.7059	1.4613	103.5768	21.2942	3.1050	4.6944
1999	163.3000	92.1895	91.2873	1.4020	104.9223	13.2352	1.7909	6.3220
2000	169.8000	94.4752	92.1303	2.2098	107.9228	32.1259	7.9745	4.4195
2001	176.6000	101.7250	102.4328	1.7957	109.8946	19.0574	4.4449	2.4801
2002	189.0000	103.7998	105.4368	1.8665	112.1826	16.6240	1.2627	3.0220
2003	200.3000	101.3381	99.8648	1.1336	113.7708	13.7459	3.8800	3.5159
2004	202.3000	104.8868	102.0424	0.7088	117.0437	5.2814	6.4704	3.1468
2005	206.3000	103.7574	97.2682	0.3426	120.7301	0.0100	1.3251	3.9355
2006	214.6000	106.7441	100.6088	0.9182	123.0768	0.0100	0.0100	5.3531

Year X1	Interest other ani-mal P68	Interest real buildings P69	Deprecia-tion buildings P70	Lamb P71	Subsidy sheep P72	Milk quota P73
1985	13.8160	1.7354	73.2002	164.7333	-	0.84
1986	17.3281	2.2607	75.9330	171.5333	-	0.84
1987	10.0238	2.0264	80.8130	144.2000	-	0.84
1988	8.2598	1.1953	85.6636	138.9333	-	0.87
1989	8.4780	1.9239	90.6699	164.3333	155.0000	0.86
1990	10.3741	3.7080	94.5637	146.4667	160.0000	0.86
1991	10.8117	4.3113	99.1200	140.0000	160.0000	0.86
1992	9.1307	4.6945	100.9862	133.3333	167.0000	1.06
1993	8.1217	2.9212	103.7896	108.2667	160.0000	1.25
1994	8.0776	2.9937	105.3275	97.8000	160.0000	1.25
1995	5.9251	2.1736	104.5496	121.2667	160.0000	1.25
1996	3.0716	1.6551	108.2079	161.6667	160.0000	1.60
1997	2.5890	1.4437	111.2885	158.3333	160.0000	1.94
1998	4.6944	1.0539	114.1766	145.0000	131.0000	2.80
1999	6.3220	1.2167	118.7976	151.8667	130.0000	3.32
2000	4.4195	1.3546	120.8617	152.4000	130.0000	3.22
2001	2.4801	1.5213	125.6136	160.2667	130.0000	3.87
2002	3.0220	1.0667	128.5248	145.2000	157.0000	2.51
2003	3.5159	1.0801	131.6593	153.4000	157.0000	4.03
2004	3.1468	0.7464	133.8946	124.3333	156.0000	3.78
2005	3.9355	0.0900	137.4344	138.0000	78.0000	4.17
2006	5.3531	0.1592	142.5474	151.8000	78.0000	3.79

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